PreK to 8 Topics at a Glance Expanded

Includes Grade Band Themes, Strand Connections, and Science Inquiry and Applications

		The Physical Setting		The Living Environment	
Themes		**Earth and Space Science**	**Physical Science**	**Life Science**	**Science Inquiry and Applications**
Observations of the Environment *This theme focuses on helping students develop the skills for systematic discovery to understand the science of the natural world around them in greater depth by using scientific inquiry.*	**P**	*Observations of both living and nonliving things in local surroundings. This includes water, the sun, rocks and soil, human-made materials and living organisms. This encourages the examination and exploration of the environment.*			*During the years of PreK to grade 4, all students must develop the ability to:* • *Observe and ask questions about the natural environment;* • *Plan and conduct simple investigations;* • *Employ simple equipment and tools to gather data and extend the senses;* • *Use appropriate mathematics with data to construct reasonable explanations;* • *Communicate about observations, investigations and explanations; and* • *Review and ask questions about the observations and explanations of others.*
		Observations of Nature	**Observations of Objects and Materials**	**Observation of Living Things**	
	K	*Living and nonliving things have specific physical properties that can be used to sort and classify. The physical properties of air and water are presented as they apply to weather.*			
		Daily and Seasonal Changes	**Properties of Everyday Objects and Materials**	**Physical and Behavioral Traits of Living Things**	
	1	*Energy is observed through movement, heating, cooling and the needs of living organisms.*			
		Sun, Energy and Weather	**Motion and Materials**	**Basic Needs of Living Things**	
	2	*Living and nonliving things may move. A moving object has energy. Air moving is wind and wind can make a windmill turn. Changes in energy and movement can cause change to organisms and the environment in which they live.*			
		The Atmosphere	**Changes in Motion**	**Interactions within Habitats**	
Interconnections within Systems *This theme focuses on helping students explore the components of various systems and then investigate dynamic and sustainable relationships within systems using scientific inquiry.*	**3**	*Matter is what makes up all substances on Earth. Matter has specific properties and exists in different states Earth's resources are made of matter, can be used by living things and can be used for the energy they contain. There are many different forms of energy. Each living component of an ecosystem is composed of matter and uses energy.*			
		Earth's Resources	**Matter and Forms of Energy**	**Behavior, Growth and Changes**	
	4	*Heat and electricity are forms of energy that can be transferred from one location to another. Matter has properties that allow the transfer of heat and electricity. Heating and cooling affect the weathering of Earth's surface and Earth's past environments. The processes that shape Earth's surface and the fossil evidence found can help decode Earth's history.*			
		Earth's Surface	**Electricity, Heat and Matter**	**Earth's Living History**	

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Interconnections within Systems *This theme focuses on helping students explore the components of various systems and then investigate dynamic and sustainable relationships within systems using scientific inquiry.*	**5**	*Cycles on Earth, such as those occurring in ecosystems, in the solar system, and in the movement of light and sound result in describable patterns. Speed is a measurement of movement. Change in speed is related to force and mass.* The transfer of energy drives changes in systems, including ecosystems and physical systems.*			*During the years of grades 5 through 8, all students must have developed the ability to:* • *Identify questions that can be answered through scientific investigations;* • *Design and conduct a scientific investigation;* • *Use appropriate mathematics, tools and techniques to gather data and information;* • *Analyze and interpret data;* • *Develop descriptions, models, explanations and predictions;* • *Think critically and logically to connect evidence and explanations;* • *Recognize and analyze alternative explanations and predications; and* • *Communicate scientific procedures and explanations.*
		Cycles and Patterns in the Solar System	**Light, Sound and Motion**	**Interactions within Ecosystems**	
Order and Organization *This theme focuses on helping students use scientific inquiry to discover patterns, trends, structures and relationships that may be inferred from simple principles. These principles are related to the properties or interactions within and between systems.*	**6**	*All matter is made of small particles called atoms. The properties of matter are based on the order and organization of atoms and molecules. Cells, minerals, rocks and soil are all examples of matter.*			
		Rocks, Minerals and Soil	**Matter and Motion**	**Cellular to Multicellular**	
	7	*Systems can exchange energy and/or matter when interactions occur within systems and between systems. Systems cycle matter and energy in observable and predictable patterns.*			
		Cycles and Patterns of Earth and the Moon	**Conservation of Mass and Energy**	**Cycles of Matter and Flow of Energy**	
	8	*Systems can be described and understood by analysis of the interaction of their components. Energy, forces and motion combine to change the physical features of the Earth. The changes of the physical Earth and the species that have lived on Earth are found in the rock record. For species to continue, reproduction must be successful.*			
		Physical Earth	**Forces and Motion**	**Species and Reproduction**	

*****While mass is the scientifically correct term to use in this context, the NAEP 2009 Science Framework (page 27) recommends using the more familiar term "weight" in the elementary grades with the distinction between mass and weight being introduced at the middle school level. In Ohio, students will not be assessed on the differences between mass and weight until Grade 6.